

User Manual

M3-PDA

Head-Mounted-Display (HMD)



Subject to technical modifications

Copyright: Trivisio Prototyping GmbH, Robert-Bosch-Str. 30, D-63303 Dreieich

WARNING

Before using the M3 HMD please read carefully these safety instructions.

Read this handbook and use the M3 HMD device in strict accordance in order to prevent any damage to your eye, other injury, loss of visual functions, property damage or death.

Children under the age of fifteen may not use this product.

We strongly advise you to get familiar with the M3 HMD device and its capabilities before you use it for the first time.

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1 Safety instructions

1.1 Health concerns

➔ **WARNING:** Eye Disease, Eye Injury, and Glaucoma

If you have been diagnosed with or are susceptible to eye disease, eye injury, or glaucoma consult your doctor before use and do not use without your doctor's approval.

➔ **CAUTION:** Heart Disease, High Blood Pressure

If you have a history of heart disease or high blood pressure consult your doctor before use and do not use without his approval.

➔ **CAUTION:** Seizures

If you have a history of temporary spasm, unconsciousness, or epileptic seizures from light stimulation, consult your doctor before use and do not use without his approval.

If any of the following symptoms occur, if using M3 HMD, stop using immediately and rest:

- eye fatigue or irritation,
- headaches or dizziness,
- aches and pain in the neck or shoulders,
- double vision,
- nausea or motion sickness,
- inability to focus on the displays.

Misuse or overuse of this product may result in eye damage, or loss of visual functions.

1.2 General safety hints

- ➔ Avoid getting the cable entangled around your neck, body or arms. Wear the cable close to your body.
- ➔ To ensure that the device does not fall off during use, always have it tightened with an adequate tension.

1.3 Warning for electrical products

- ➔ To avoid any risk of electrocution, do not bring any part of the M3 HMD in contact with water when it is connected to an AC outlet or a PC.
- ➔ Avoid using and storing the M3 HMD at wet, humid, dusty and smoky surroundings and extreme temperatures.
- ➔ Do not use M3 HMD at temperatures below -10°C and above +40°C. Avoid dropping or mechanical shock, as frame and displays may be deformed.
- ➔ Always unplug the M3 HMD when it will not be used.
- ➔ In case of damage contact your retailer. There are no user serviceable parts. Only qualified service personnel should perform any service required on this product.

2 Description

2.1 Elements of the CRADLE

The CRADLE offers connection to Dell PDA "Axim x51v". On the side there are

- USB connector for firmware updates and image adjustments
- External Power Connector (12V 1A)

On the top side is a push-button to start the HMD.



2.2 Prepare the CRADLE to insert PDA

Press simultaneously the two buttons located on both sides of the CRADLE.



Hold the buttons pressed and move the upper part of the CRADLE.



Insert PDA into the CRADLE. Move down until the connector is attached properly.



Do not push or pull the PDA while lifted up !!!

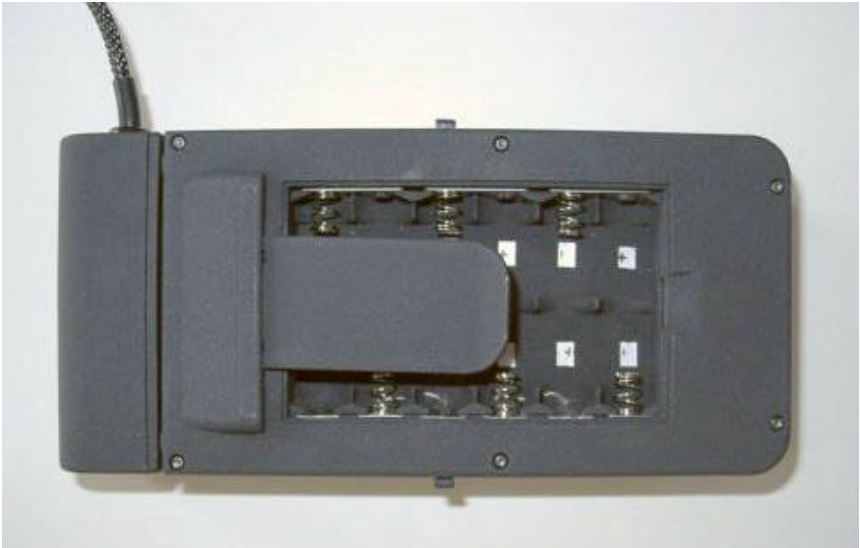


Close the upper part of the CRADLE only when PDA is flat inside (keep buttons of CRADLE pushed all the time).



2.3 Insert/Change batteries

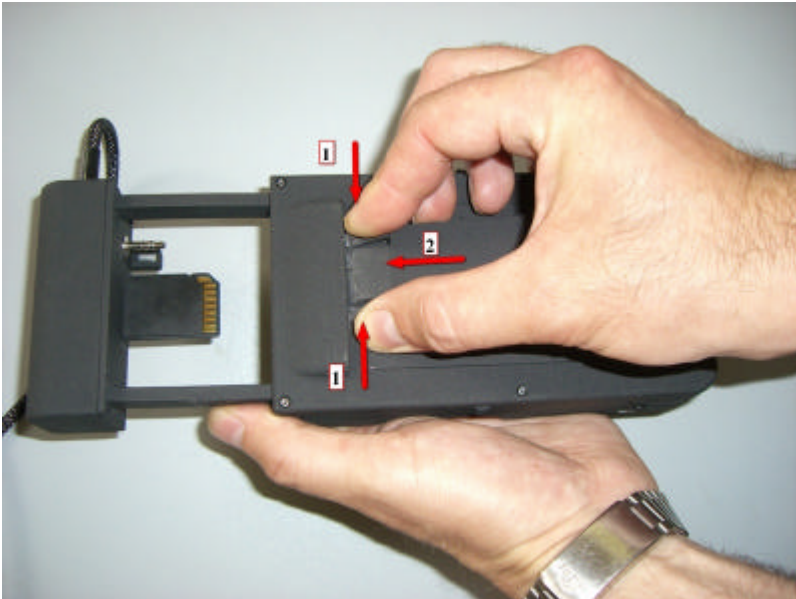
Before you use the HMD for the first time, please check whether the batteries are fully charged or new. Open the cover on backside and insert batteries in correct orientation. You can remove the belt fastener for easier access (see also 2.4 Insert belt fastener page 12).



The M3 HMD is powered by six AA batteries. The PDA is powered by its own battery. For non-mobile applications it is possible to power both (PDA and HMD) from an external AC-DC adapter (12V 1A).

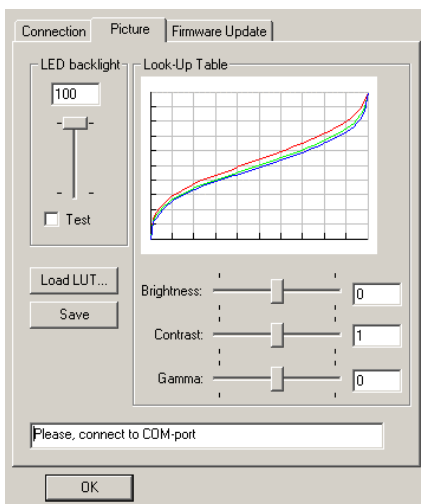
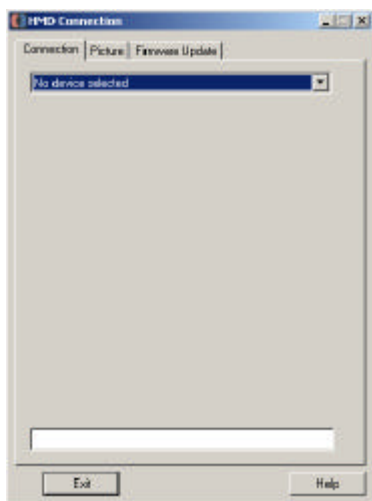
2.4 Insert belt fastener

To insert belt fastener push two spring plates first and hold them pressed. Then insert the belt fastener into the slot of the CRADLE



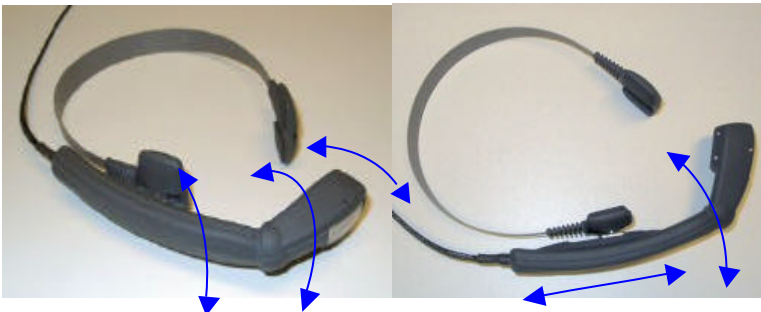
2.5 Adjusting the image

To adjust the image of HMD the CRADLE must be connected with an USB cable to a PC. Start the software "hmd_connection.exe" either from CD-ROM or copy to your computer. After installation select the HMD (also serial number is shown here). Then you can go to menu "Picture" and adjust the brightness, contrast and gamma of the image.



2.6 Adjusting the HMD

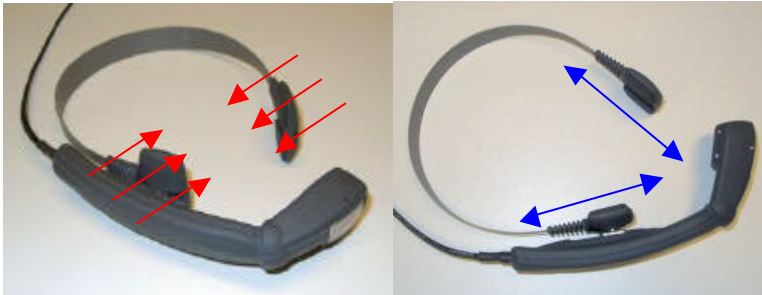
To optimize the position of the display carefully move the ocular into the right position. You can slide and rotate the case relatively to the head-fixation and you can rotate the front side hinge in all directions.



Adjustment to the head with a single head band

The pressure of the head band on you head (called spring force and marked by the → red arrows) is set at the manufacturers premises, and is only adjustable there. Hence, it is needed to say which size of head will wear the monocular.

The → blue arrows show the possibility to adjust manually the size of this head band.



Adjust carefully the head band by pulling and pushing with your hands. Adjust both sides equally.



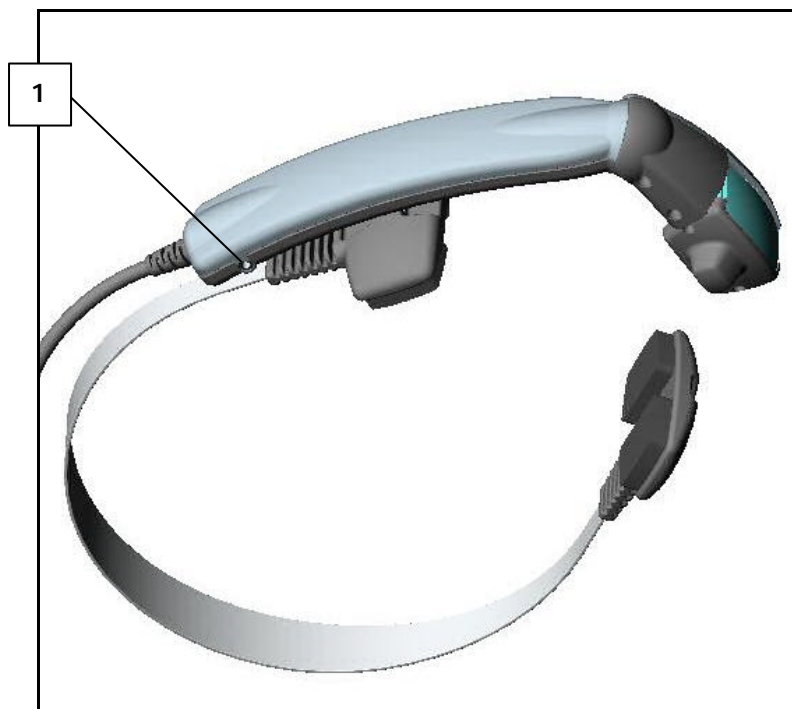
Minimal position



Maximal position

2.7 Using external earphones

Plug your external earphones to the connector on the bottom side of case (1) 2.5mm jack.



2.8 Removing PDA from the CRADLE

Removing the PDA from the CRADLE is similar to inserting process. But additionally fix the PDA(1) with one finger to prevent pulling out the bottom side connection.



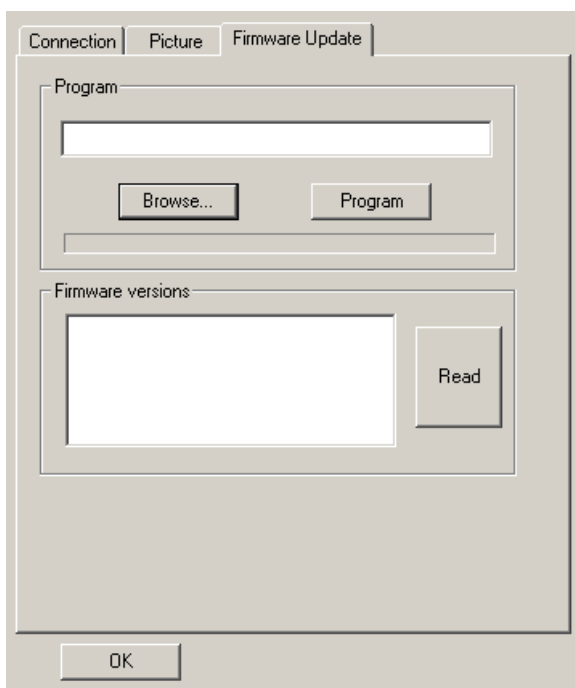
Push the both buttons on side of CRADLE and pull upper section carefully. Then finally pull out the PDA.



2.9 Firmware update

In the need of a firmware update, the cradle must be connectd with USB cable to a PC.

Start HMD-software "hmd_connection.exe" and select the menu "Firmware Update", then choose new firmware file by clicking on "Browse". The firmware is provided as "name.hex" file. Then click "Program". During the update process never unplug the device and do not shut down the computer and do not turn off the power !




3 Maintenance and Cleaning Instructions

To clean the HMD use a damp cloth. A light rinsing agent may be added to the water. Do not use any detergents.

To clean the ocular of the HMD use a dry, clean cloth. A cleaning cloth for this purpose is provided with the M3 HMD-kit.

In case of damage contact your retailer. There are no user serviceable parts. Only qualified service personnel should perform any service required on this product.

4 Returning used electronic devices in EU countries

	<p>This HMD and accessories shall not be treated as household waste. The separate collection is a condition for reuse, recycling and utilisation of used electronic devices, which ensures the protection of resources. To comply with german ElektroG (Rücknahme und Entsorgung von Elektro- und Elektronikaltgeräten) and european WEEE (Waste Electrical and Electronic Equipment) electronic used devices from private households can be returned free of charge. For details please contact your local distributor or directly Trivisio Prototyping GmbH (www.trivisio.com).</p>
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5 Technical Data

5.1 Head Mounted Display

Display	SVGA microdisplay 480,000 pixels colour equals 1,440,000 pixels
Field of view	approx. 32° diagonal
Eye relief.....	approx. 24mm
Camera	320x240 pixels color, 15 fps
Focus	manually adjustable
Iris.....	fixed
Power consumption.....	2.6W (camera+HMD)
Operating temperature.....	-10°C to +40°C
Weight HMD	135g
Dimensions (W/H/D).....	200mm/50mm/250mm (including head fixation)

5.2 CRADLE

Weight	480g (incl. battery+PDA)
Dimensions (W/H/D).....	81mm/177mm/36mm
Operating temperature.....	-10°C to +40°C
Battery	changeable + rechargeable 6x AA
Operating time.....	approximately based on standard batteries: 4 h